

### ABSTRACT OF THE DISCLOSURE

The present invention provides a deposition method and deposition apparatus capable of forming a fluorine-containing silicon inorganic insulating film of stable film properties and a method of manufacturing a semiconductor device. Deposition apparatus 10 comprises parallel plate type electrodes 16, 22 arranged within reaction chamber 12, gas supply sources 20, 32, 34 for feeding process gas containing  $\text{SiH}_4$ ,  $\text{SiF}_4$  and oxygen source substance into reaction chamber 12, valves 36, 38, 40, gas mixing chamber 28, and power source 44 that supplies RF power for generating the plasma of the process gas. In this deposition apparatus 10, power source 44 is capable of supplying RF power of at least 1000 Watts to parallel plate type electrodes 16, 22. In this apparatus 10, fluorine-containing silicon oxide film is deposited on wafer 14 by generating the plasma of process gas containing  $\text{SiH}_4$ ,  $\text{SiF}_4$  and  $\text{N}_2\text{O}$ .